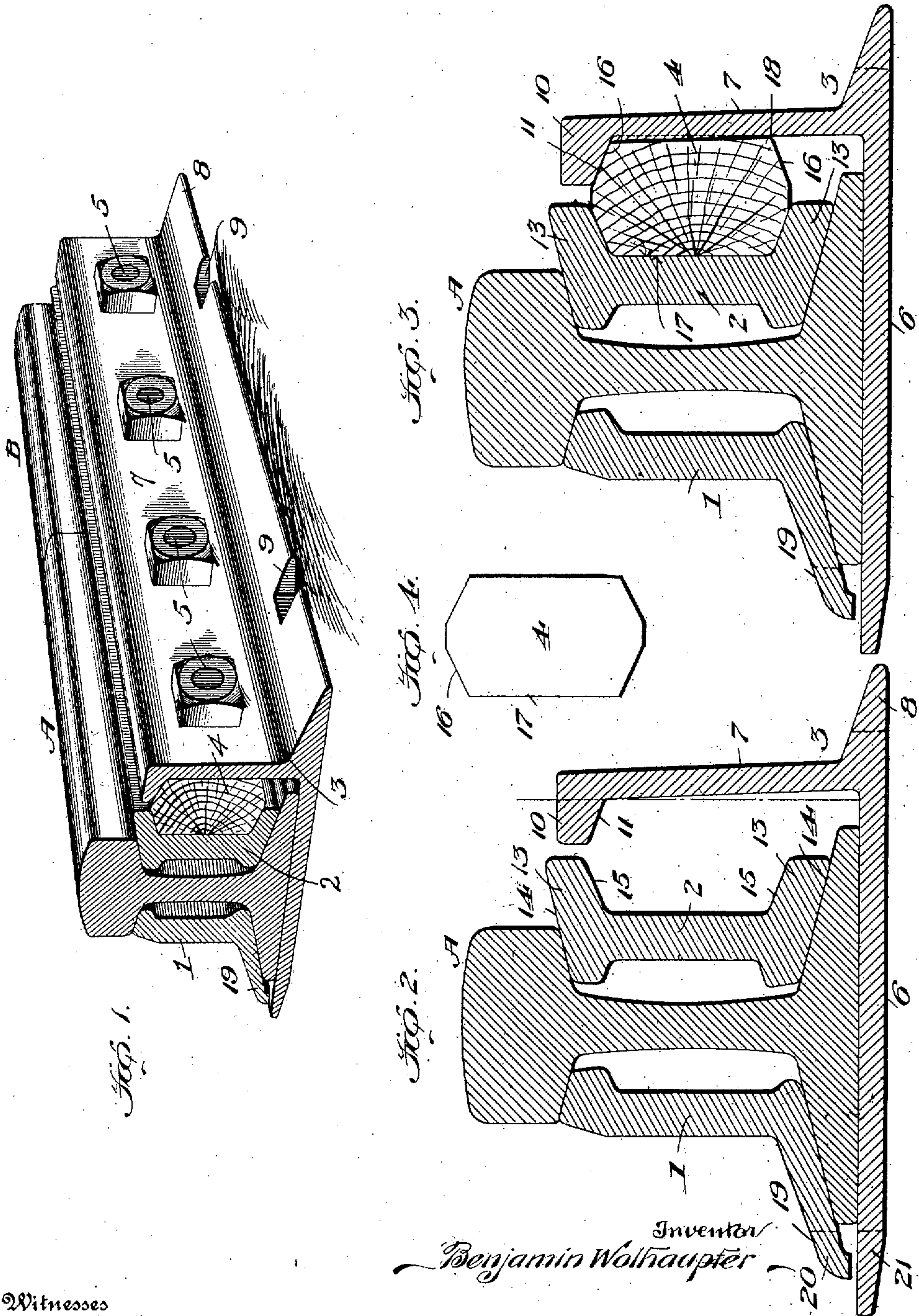


No. 850,198.

PATENTED APR. 16, 1907.

B. WOLHAUPTER.
RAIL JOINT.

APPLICATION FILED JULY 12, 1906.



Witnesses

William O. Deane.

By

B. Wolhaupter.

Attorney

UNITED STATES PATENT OFFICE.

BENJAMIN WOLHAUPTER, OF NEW YORK, N. Y., ASSIGNOR TO THE RAIL JOINT COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

RAIL-JOINT.

No. 850,198.

Specification of Letters Patent.

Patented April 16, 1907.

Application filed July 12, 1906. Serial No. 325,862.

To all whom it may concern:

Be it known that I, BENJAMIN WOLHAUPTER, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Rail-Joints, of which the following is a specification.

This invention relates to rail-joints, and more particularly to that type of joint now known to railroad engineers as the "Weber" joint, which is characterized by a base-support or truss for the rail ends beneath the base of the rails and also by the employment of an elastic filler or washer block interposed between one of the side plates of the joint and the upright or clamp member of an angle-shoe forming the base-support.

To this end the invention primarily has in view a redesigning of the Weber type of joint along lines for securing a maximum strength and efficiency, while at the same time providing a construction readily set up and adjusted by unskilled or careless trackmen.

In the above connection the invention has in view for one of its special objects a uniform design and form for certain members of the joint, whereby these members are made reversible in a manner to insure great facility in the application of the joint to rail ends without impairing in the least the desirable features of the Weber type of joint.

Another object of the invention is to secure a construction of angle-shoe which renders this element of the joint stiffer both vertically and laterally and also to provide the various faces of the joint with such angles in relation to the elements with which they cooperate as to secure a maximum efficiency in distributing the load imposed on the rail ends.

A further object of the invention is to provide improved means for effecting a positive drawing up of the base-plate of the shoe against the bottom of the rail-base on both the outer and inner flanges thereof.

With these and many other objects in view, which will readily appear to those familiar with the art as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

The essential features of the invention involved in the carrying out of the objects above indicated are necessarily susceptible to structural change without departing from the scope of the invention; but a preferred embodiment thereof is shown in the accompanying drawings, in which—

Figure 1 is a sectional perspective view of a rail-joint constructed in accordance with the present invention and shown in its set-up applied position. Fig. 2 is a skeleton cross-sectional view of the joint, illustrating the normal inclined or angular position of the upright clamp-plate member of the shoe. Fig. 3 is a similar view showing the positions assumed by the parts when the bolts are tightened and the clamp-plate member of the shoe drawn under pressure against the wood filler or washer block. Fig. 4 is a detail end view of the universal reversible filler-block.

Like references designate corresponding parts in the several figures of the drawings.

In carrying out the special improvements contemplated by the present invention no departure is made from the general organization of parts which characterize the Weber type of rail-joint, so for purposes of illustrating these improvements in their application to that type of joint there is shown in the drawings a rail-joint associated with rail ends A and B and essentially comprising the opposite side plates 1 and 2, respectively, the angle-shoe 3, the filler-block 4, and the joint-bolts 5.

In the type of joint referred to the opposite side plates 1 and 2, which subserve the usual functions of the common fish-plates or angle-bars, are technically known, respectively, as the "angle-plate" and the "channel-plate," and the angle-shoe 3 consists of a base-plate member 6 and an upright clamp-plate member 7, arising from one side edge of the member 6 and located at the outside of the joint. The said angle-shoe 3 performs its usual functions of providing a base-support or truss beneath the bottom of the rails, and in the present invention is designed along lines that will secure this result in the most effective and practical manner. To secure a maximum strength for and stiffening of the shoe 3, the latter is provided along the outer bottom corner thereof with a longitudinally-arranged reinforce corner-rib 8, provided therein at the proper intervals with the spike

notches or openings 9. In addition to the outer bottom corner-rib 8 the said shoe is formed at the top edge of its upright member or plate 7 with a longitudinal intumed head-rib 10. This rib projects to one side of the vertical plane of the plate-body 7 and serves to stiffen the same both laterally and vertically, and the present invention also contemplates designing said rib 10 so as to form on the under side thereof an inclined or beveled camming-face 11, the purpose of which will presently appear. Furthermore, in the formation of the shoe and its upright plate 7 one of the distinctive features of the invention resides in setting or inclining the said upright plate or member 7 from a vertical plane. Hence the upright plate or member of the shoe inclines to a slight degree from a vertical plane at right angles to the base 6 of the shoe. Usually this may not be greater than one to two degrees from a right angle, though obviously the degree of slant or inclination for said plate or member 7 may vary without affecting the mechanical action performed thereby, as will be hereinafter fully pointed out.

Another distinctive feature of the invention resides in designing the outer channel-plate 2 so that the same is constructed along uniform angles and curves at both top and bottom, thereby rendering the same reversible and capable of being reversed from top to bottom, and vice versa, and in either position register perfectly in the channel between the under side of the rail-head and the outer base-flange thereof, as may be plainly seen from Figs. 2 and 3 of the drawings. To provide for this, the said channel-plate 2 is provided at its top and bottom or opposite longitudinal edges with the uniform duplicate head and foot flanges 13. These head and foot or top and bottom flanges 13 are formed on their outer sides with inclined faces 14, disposed at the same angle, and also corresponding to the angles of the under side of the rail-head and the upper side of the base-flanges. By reason of this uniformity in the angles of the outer faces 14 of the head and foot flanges of the channel-plate and their correspondence with the angles of the rail-faces with which they cooperate it is obvious that the said channel-plate is made truly reversible and can be set in place with either of the flanges 13 uppermost. It should also be noted in this connection that the said flanges 13 are of similar or uniform length.

In addition to being itself reversible the channel-plate 2 is also designed to permit of the reversibility of the wood filler-block 4. To provide for this, the top and bottom flanges 13 of the channel-plate are formed on their inner sides, at one side of the vertical plane of the plate-body, with the inner inclined bearing-faces 15, preferably formed on angles of precisely the same degree as the an-

gle of the camming-face 11 of the head-rib 10 and as the angles of the beveled bearing-faces 16 at the upper and lower sides of the filler-block 4. Though this is the preferable relation of the elements referred to, it should be understood that the angle of the camming-face 11 may be different from the angles of said other faces, and still the filler-block 4 can be reversed up or down, it only being necessary in this connection that the angles of the faces 15 be always the same.

It will be observed that the filler-block 4 is constructed on perfectly symmetrical and uniform lines, the same being provided with double beveled upper and lower sides, on each of which are formed the separate opposite bevels or beveled faces 16, which extend uniformly from the vertical center of the filler-block to the flat side faces 17 of said block. It will be observed that the opposite or separate bevels on the upper and lower sides of the filler-block converge toward the vertical center thereof, so that when in position between the channel-plate 2 and the upright clamp plate or member 7 the bevels or beveled faces of the filler-block match and register perfectly with the upper and lower inclined bearing-faces 15 of the channel-plate and also with the under inclined camming-face 11 of the head-rib 10.

By reason of the uniform and duplicate formation of the filler-block along the top and bottom thereof it will be apparent that the said block has what may be properly termed a "universal" mounting and may therefore be characterized as a "universal reversible block," inasmuch as the same may not only be reversed from side to side, but also from top to bottom and from end to end.

Referring to that phase of the invention dealing with the inclination from the vertical of the clamp plate or member 7 and the camming-face 11 thereof, it will be understood that the filler-block 4 possesses the characteristic of elasticity and is preferably made of a block or bar of wood as usually prevails in constructing the Weber type of rail-joint. Hence by reason of the elasticity of the filler-block the same is susceptible to compression when the upright clamp plate or member 7 is drawn tightly against the same through the tightening up of the joint-bolts. Consequently when this action takes place the inclined clamp plate or member 7 compresses the wooden filler-block at an inclination, as indicated by the dotted line in Fig. 3 of the drawings, thereby causing the wood to exert an outward pressure on the upper part of the member 7 in a direction which rocks the same on the outer bottom corner 18 of the filler-block. In other words, the outward pressure of the upper part of the filler-block when under compression exerts a fulcrum action on the upright member or leg of the shoe, which causes the inner edge of the base plate or member 6 of the shoe to be drawn

tightly and firmly against the under side of the inner flange of the rail. While this action is taking place the inclined camming-face 11 will ride upward upon the outer bevel or bearing face 16 at the top of the filler-block, with the result of camming up the plate or member 7, thereby drawing the base of the shoe firmly and tightly against the under side of the outer flange of the rail-base. These two actions therefore provide and maintain a perfect bearing-support for the shoe-base beneath the rail-base and render it impossible for the shoe to sag away from the base of the rail-flange. In connection with this feature of the invention it will be observed that on account of the head-rib 10 overhanging the filler-block 4 there is provided what may be termed an "interlocking" engagement between the upright member or leg of the shoe and the filler-block, which serves to firmly hold the parts against any tendency to downward movement or displacement either during or after the drawing up or lifting action above referred to.

In the construction shown the angle-plate 1 is preferably formed with a base-lip extension 19, overhanging the edge of the inner rail-flange and formed with spike-receiving openings 20, which receive the spikes passing through the usual openings 21 in the inner edge of the shoe-base. This construction provides for a practical spiking of the joints, which prevents longitudinal movement or displacement of the parts.

From the foregoing it is thought that the construction, action, and many advantages of the herein-described rail-joint will be apparent without further description.

I claim—

1. A rail-joint having a side plate, and a universally-reversible filler-block cooperating therewith.
2. A rail-joint having a reversible side plate, and a reversible filler-block cooperating therewith.
3. A rail-joint having a reversible side channel-plate, and a reversible filler-block registering with said channel-plate.
4. A rail joint having a reversible side plate, and a filler-block cooperating therewith and reversible from side to side and from top to bottom.
5. A rail-joint having a reversible side channel-plate, and a filler-block registering with said channel-plate and reversible from side to side and from top to bottom.
6. In a rail-joint, a side plate of uniform design and angles at top and bottom, and a reversible filler-block cooperating with said side plate.
7. In a rail-joint, a side plate of uniform design at top and bottom with the angle of its rail-adjointing faces corresponding with the angle of the under side of the rail-head and the upper side of the rail-flange, a rail-

shoe, and a reversible filler held between said shoe and said side plate.

8. In a rail-joint, a reversible side channel-plate of uniform design, a rail-shoe, and a reversible filler-block interposed between the shoe and the channel-plate.

9. In a rail-joint, the side plates one of which is reversible, a rail-shoe, and a reversible filler-block clamped between the shoe and the reversible side plate.

10. In a rail-joint, the side plates, the rail-shoe, and a filler-block interposed between a side plate and the shoe and reversible from side to side and from top to bottom.

11. In a rail-joint, the side plates, the rail-shoe, and a filler-block interposed between the shoe and a side plate and reversible from side to side, from top to bottom, and from end to end.

12. In a rail-joint, the side plates, one of which is reversible from top to bottom, the rail-shoe, and a universally-reversible filler interposed between the shoe and said reversible side plate.

13. In a rail-joint, the side plates one of which is provided with uniform duplicate head and foot flanges formed on their inner sides with inclined bearing-faces, a rail-shoe provided at the top edge of its upright member with an intumed head-rib having an inclined face, and a universally-reversible filler-block.

14. In a rail-joint, the side plates, one of which is provided with uniform duplicate head and foot flanges formed on their inner sides with inclined bearing-faces, a rail-shoe provided at the top edge of its upright member with an intumed head-rib having at its under side an inclined face of a corresponding angle to the angles of said bearing-faces of said side plate, and a universally-reversible filler-block provided with flat side faces and with uniform double beveled upper and lower sides.

15. In a rail-joint, the side plates, one of which is of a uniform channeled design and reversible from top to bottom, a rail-shoe provided with a head-rib having an inclined face, and a universally-reversible filler-block provided with flat side faces and with uniform double beveled upper and lower sides.

16. In a rail-joint, the combination with the side plates and a filler-block, of a rail-shoe engaging the block, said block and shoe having means for drawing the shoe-base against the under side of the rail-base when the bolts are tightened.

17. In a rail-joint, the side plates, an angle-shoe, and a filler-block interposed between the shoe and one of the side plates, said shoe and filler having cooperating elements providing means, upon the tightening of the joint-bolts, for drawing the shoe-base against the under side of the rail-base.

18. In a rail-joint, the side plates, an angle-

shoe, and filler-block, said shoe and filler having cooperating elements providing means, upon the tightening of the joint-bolts, for lifting the shoe-base against the under side of the outer flange of the rail-base.

19. In a rail-joint, the side plates, an angle-shoe, and an elastic filler, said shoe and filler cooperating to provide means, when the filler is placed under compression, for lifting the shoe-base against the under side of the inner flange of the rail.

20. In a rail-joint, the side plates, an angle-shoe, and an elastic filler, said shoe and filler having separate cooperating means to provide respectively, when the joint-bolts are tightened, for drawing the shoe-base against the under side of both the outer and inner flanges of the rail-base.

21. In a rail-joint, the side plates, an angle-shoe, and a filler, said angle-shoe having a camming-up action on the filler when the bolts are tightened.

22. In a rail-joint, the side plates, an angle-shoe, and an elastic filler, said shoe having an inclined clamp member interlocked with the filler and arranged to be drawn against the same, whereby the outward pressure of the latter when under compression, exerts a fulcrum action on said clamp member to lift the shoe against the under side of the rail-base.

23. In a rail-joint, the side plates, an angle-shoe, and an elastic symmetrical filler, said shoe having an inclined clamp member interlocked with the filler, and arranged to be drawn against the same, whereby the outward pressure of the latter when under compression exerts a fulcrum action on said clamp member to lift the shoe against the under side of the rail-base.

24. In a rail-joint, the side plates, an angle-

shoe having an upright member inclined from the vertical and provided with a head-rib having an under inclined camming-face, and an elastic filler interposed between one of the side plates and said upright member of the shoe, said filler having a beveled face engaged by said camming-face of the head-rib.

25. In a rail-joint, the side plates, an angle-shoe, having an upright member inclined from the vertical and provided with a head-rib having an under inclined camming-face, and an elastic symmetrically-reversible filler interposed between one of the side plates and said upright member of the shoe, said filler having a beveled face engaged by said camming-face of the head-rib.

26. In a rail-joint, the side plates, a clamp member arranged opposite one of the side plates, and a universal filler interposed between said side plate and clamp member.

27. In a rail-joint, the side plates, one of which is provided with uniform duplicate head and foot flanges formed on their inner sides with inclined bearing-faces, a rail-shoe provided at the top edge of its upright member with an inturned head-rib having an inclined face, and a filler-block.

28. In a rail-joint, the side plates, one of which is provided with uniform duplicate head and foot flanges formed on their inner sides with inclined bearing-faces, a rail-shoe provided at the top edge of its upright member with an inturned head-rib having an inclined face, and a reversible filler-block.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

BENJAMIN WOLHAUPTER

Witnesses:

M. SOWERS,
A. M. CUZNER